

Tri a 14, wheat LTP, a marker of wheat respiratory allergy

Over 30 wheat allergens have been associated to baker's asthma and much of them have been also implied in food allergy. Few of them have rendered as major allergens. Tri a 14, wheat LTP, has been associated to baker's asthma as major allergen in patients that can consume peach and wheat derived foodstuffs. In Spanish baker's asthma patients, 60% showed positive response to Tri a 14 and 45% to Pru p 3. However, the cross-reactivity between peach and wheat has been unusual in allergic population (1,8). Moreover, wheat allergy is not so often as should be attending to the high consume.

In the present study, the response of 63 allergic patients against Pru p 3 and Tri a 14 has been described to better understand their role in cross-reactivity. Three groups of patients were included: Baker's asthma patients, peach allergic and LTP sensitized patients. The patients could be distinguished according to response to bronchial-, oral challenge (performed in a blinded fashion) with wheat and peach extract (fresh-seed and fruits with a concentration 1/10 w/v of 0.9% saline solution, Tri a 14 with a concentration 20 µg/mL), and their response to skin prick test with natural and recombinant Pru p 3 and Tri a 14.

Patients with baker's asthma and tolerant to peach and wheat derived foodstuff ingestion showed positive reactions when they were bronchial challenged with wheat and negative with peach extract confirming their clinical history of respiratory allergy.

By contrast, patients that only referred peach allergy and positive SPT to Pru p 3, showed mainly only positive response to oral challenge with peach (100%), although in a few cases, patients also responded to peach or wheat in bronchial challenge test (20, 22% respectively). Above commented clearly suggest that Tri a 14 would be a LTP marker of inhalant allergy, being a sensitizer mainly by respiratory way. On the other hand, Tri a 14 could be the necessary diagnosis tool to baker's asthma and wheat respiratory allergies.

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References

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Table 1. Demographic and clinical data of selected patients

¹ As, asthma; An, anaphylaxis; U,urticaria, SAO: Síndrome oral; R, rhinitis.² ba, barley; ry, rye; ri, rice; co, corn; pe, peach; or, orange; le, lentil;so, soybean; eg, egg. + positive - negative; ND, non-determined
Square area; positive value up to 20 mm²

Patient n°	Age/sex	Reported symptoms ¹	Specific IgE to Wheat (kU/l); Other positive foods (sigE>0.35kU/l)	SPT				Oral Challenge		Bronchial Challenge		
				Wheat (mm ²)	nTri a 14/rTri a 14 (mm ²)	peach	nPru p3 /rPrup3 (mm ²)	Wheat	Peach	Wheat	Peach	nTri a 14 (20 ug/mL)
1	19/M	As	(1.52) ba, ry, pe	22	0/22	0	0	-	-	+	-	+
2	22/M	As, U	(17.2) le, soy	28	26/34	0	0	+	-	-	-	-
3	18/M	As, An	(4.2) -	38	32/32	32	0.	+	-	+	-	ND
4	22/M	As/An	(22.1) ba, ry	23	24/30	0	0	+	-	+	-	ND
5	37/M	As	(6.03) ba, ry	20	28/29	0	0	-	-	+	-	+
6	20/M	As,	(10.6) ba, ry, le,	38	28/31	0	0	-	-	+	-	+
7	46/M	As	(4.63) ba, ry	29	30/32	0	0	-	-	+	-	+
8	25/F	As	(3.66) eg	28	26/26	0	0	-	-	+	-	+
9	19/M	As	(1.85)	32	32/34	0	0	-	-	+	-	+
10	27/m	As	(1.4), pe	24	24/26	0	0	-	-	+	-	+
11	40/M	As	(3.13)	26	26/28	0	26/28	-	-	+	-	+
12	27/M	R, As	(0.94)	22	26/26	0	26/26	-	-	+	-	-
13	36/M	R, As	(1.04)	20	22/24	0	22/24	-	-	+	-	-
14	37/M	As, U	(21.5)	42	42/44	0	20/20	-	+	+	-	+
15	38/M	As	(2.15)	22	22/28	0	22/28	-	-	+	-	+
16	41/M	As	(1.83)	24	14/26	0	0	-	-	+	-	+
17	65/M	R, As	(0.62)	22	22/26	0	22/26	-	-	+	-	+
18	40/M	R As	(0.49)	22	22/24	0	22/24	-	-	+	-	+
19	52/M	As	(1.32)	32	32/36	0	32/36	-	-	+	-	+
20	34/M	R, As	(43.1)	52	52/66	0	0	-	-	+	-	+
21	26/M	As	(8.3)	34	34/36	0	0	-	-	+	-	+
22	41/M	As	(0.66)	22	22/24	0	0	-	-	+	-	-
23	20/M	As	(11.6)	32	32/36	0	0	-	-	+	-	+
24	22/M	As	(1.14)	26	26/26	0	0	-	-	+	-	+
25	41/M	As	(3.14)	26	28/28	0	0	-	-	+	-	+
26	38/M	As	(2.28)	28	28/26	0	0	-	-	+	-	+
27	28/F	A,U,SAO	(0.43) pe	0	0.	33.5	40/95	-	+	+	+	+
28	27/F	An, U	(46.2) pe	0	0.	63.5	63/66	+	+	+	+	+
29	18/F	An	(0.91) pe	0	0.	0.	20/29	+	+	+	+	ND
30	21/M	A,U,SAO	(2.01) pe	22	0	20	22/22	+	+	+	+	+
31	20/M	As,An	(0.42) pe	0	0.	52	48/50	-	+	-	+	ND
32	19/f	As, SAO	(1.35) pe	0	0.	32	78/89	+	+	-	-	-
33	19/M	U	(0.5) lo, pe	0	0.	0.	20/22	-	+	-	-	-
34	18/M	U, SAO	(0.3) to, pe	0.	0.	22	22/28	-	+	-	-	-
35	18/M	SAO	(1.8), ba, pe	0.	0.	34	34/43	-	+	-	-	-
36	20/M	SAO	(0.4), to,pe	0.	0.	22	22/24	-	+	-	-	ND
37	23/F	U, SAO	(-) pe	0.	0.	32	32/46	-	+	-	-	ND
38	22/M	U,SAO	(-) pe	0.	0.	24	25/38	-	+	-	-	ND
39	30/F	An, U	(-) pe	0.	0.	63.5	63/84	-	+	-	-	ND
40	18/F	An	(0.4) pea, pe	0.	0.	22	24/30	-	+	-	-	ND
41	25/F	An	(0.36) pea, pe	0.	0.	49	38/38	-	+	-	-	ND
42	20/F	An	(0.7) le, ba, pe	21	0.22	86	62/64	-	+	-	ND	ND
43	47/F	An	(-) pe	0	0	43	46/52	-	+	-	ND	ND
44	18/M	An	(1.02) pea,so, pe	0	0.	38	32/32	-	ND	-	-	ND
45	18/M	As	(7.35) ba, ry, pe	78	0/22	78.5	68/72	+	ND	+	+	+
46	46/F	As, An	(100) ba ri pe	82	84/85	42	48/51	+	ND	+	-	ND
47	41/M	As/An	(4.10) egg, pe	32	28/32	22	24/22	+	+	+	-	ND
48	19/M	An	(1.51) to, ba, pe	24	22/24	62	60/68	+	+	+	+	ND
49	13/M	An	(1.56) ba, to, pe	20	0/24	34	36/42	+	+	+	+	ND
50	28/M	As	(5.29) ba, la, pe	42	32/34	34	28/34	+	+	+	+	ND
51	19/F	An	(1.2)	24	24/30	62	60/62	+	+	+	+	+
52	22/M	R, An	(1.21) pe	0	0/26	22	29/39	+	ND	+	+	ND
53	35/F	An	(2.51) ry, ba pe	36	32/34	42	46/52	+	ND	+	+	ND
54	41/M	An	(4.19) ry, egg, pe	38	28 /42	32	28/36	+	ND	+	+	+
55	24/M	As	(0.92) pe	22	0/22	42	40/42	-	+	-	-	-
56	22/F	As	(4.6) ba, ry, pe	28,5	30/34	22	0/26	+	-	-	-	-
57	22/F	As, An	(36) ry, pe	42	46/42	48	29/39	+	+	-	-	ND
58	20/M	An	(8.3) to, pe	40	23/24	42	42/46	+	ND	-	-	ND
59	21/F	An	(16.6) ba,ry,pe	74	63/76	32	39/42	+	+	-	-	ND
60	56/M	As	(1.4) ba, ry	20	22/24	0	0/24	-	-	+	-	-
61	25/M	As, U	(3.3) ba, co	20	24/24	0	0/26	-	-	+	-	+
62	31/F	As, An	(7.6) ba, ry, or	28,5	32/34	28	28/29	-	ND	+	-	ND

Figure 1: Percentage of the different response to wheat (nTri a 14) and peach (nPru p 3) LTP.

